



**UNITED STATES DEPARTMENT OF COMMERCE  
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/212,915	12/16/98	TAKASU	H A28838-I-A

BAKER & BOTTS  
30 ROCKEFELLER PLAZA  
NEW YORK NY 10112

MM92/0830

EXAMINER

ESTRADA, M

ART UNIT

PAPER NUMBER

2823

DATE MAILED:

08/30/00

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

# Office Action Summary

Application No.  
09/212,915

Applicant(s)  
Takasu

Examiner  
Michelle Estrada

Group Art Unit  
2823



☐ Responsive to communication(s) filed on \_\_\_\_\_

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

## Disposition of Claims

☒ Claim(s) 1-9 is/are pending in the application.

Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

☐ Claim(s) \_\_\_\_\_ is/are allowed.

☒ Claim(s) 1-9 is/are rejected.

☐ Claim(s) \_\_\_\_\_ is/are objected to.

☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.

## Application Papers

☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some\* ☒ None of the CERTIFIED copies of the priority documents have been

☒ received.

☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 5

☐ Interview Summary, PTO-413

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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Claims 1-9 are objected to because of the following informalities: In claim 1, line 3, it appears that --is-- should follow "layer". Appropriate correction is required.

Claim 2 is rejected under 35 U.S.C. 101 because the disclosed invention is inoperative and therefore lacks utility. The ion implanted region inherently "reaches for the surface" at the commencement of the annealing and diffusing step. Also, due to the gaussian distribution of implanted ions some ions reside at the surface of the substrate prior to the annealing and diffusing step.

→ It is noted that claim 6 is not accorded the benefit of the filing date of serial number 09/026096 under 35 U.S.C. 120 because support for claim 6 is not found therein.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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Claims 1 and 3-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Yoshida et al and the following comments.

Yoshida et al discloses forming oxide layer 2 covering a substrate 1, implanting an impurity ion into region 5 where a buried region is to be formed, providing the substrate into a reactor furnace (col.3, line 36), preparing a non-oxidizing N<sub>2</sub> atmosphere (col.3, line 38) for annealing the substrate to activate and diffuse the implanted impurity by increasing to a first temperature (col.3, line 38), introducing cleaning gas into the reactor (col.3, lines 65+) followed by epitaxial growth on a surface of the wafer (col.4, lines 4+). Yoshida et al does not disclose performing the annealing/activation step and the epitaxial growth step in the same reactor, the relative temperatures of the step and the epitaxial growth step and the use of H<sub>2</sub> or HCl as the cleaning gas.

The examiner takes judicial notice that performing multiple processes in a single reactor to avoid contamination of the wafer by exposure to the atmosphere during transfer was known at the time of applicant's invention. It would have been within the scope of one of ordinary skill in the art to employ the known process for its known intended purpose to achieve the process steps of Yoshida et al. It would not be necessary to cool the wafer to room temperature in performing such a process, because that would merely add complexity to the process. It is noted that the claims do not require a continuous raising or lowering of the temperature to achieve the epitaxial growth temperature in recitation of "shifting the inside temperature of the reactor".

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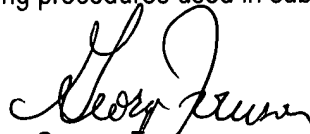
The choice of particular temperatures for the annealing/activation and epitaxial growth steps would have been within a matter of routine optimization because temperatures for the steps are recognized as result effective variables.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group Receptionist whose telephone number is (703) 308-0956. **See MPEP 203.08.**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Michelle Estrada whose telephone number is (703) 308-0729. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (703) 308-4918. The fax number for this group is (703)308-7722( 7724,3431 and 3432). MPEP 502.01 contains instructions regarding procedures used in submitting responses by facsimile transmission.

  
George Fourson  
Primary Examiner  
Art Unit 2823

MEstrada  
August 25, 2000